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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/477,164	01/05/2000	JORG BOROWSKI	A72204US	8780

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EXAMINER	
CHANG, EDITH M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/477,164	Applicant(s) BOROWSKI ET AL.	
	Examiner Edith M Chang	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,15,17,19 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,15,17,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 7 2004 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Liu et al.

The rejections are the following:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, 6-7, 11, 13, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al. in view of Liu et al. (US 5982809).

Regarding **claims 1, 6, & 13**, except having the second data rate being lower than the first data rate via a downconverter , Belotserkovsky et al. discloses a method (FIG.5) of providing frequency correction for a spread spectrum communication receiver (column 1 lines 5-10), comprising receiving a first signal having a first data rate (401 FIG.4/FIG.5, column 5 lines 54-55, wherein the first rate is the DSSS input signal from ADC 401, FIG.7 shows the first rate is 2x chip rate, the input of 402 is the first signal); a second signal (404 FIG.4/404 FIG.5 the input of 404 is the second signal); a third signal having a third data rate, wherein the third data rate

(SYMBOL DATA OUT input to 405 FIG.5, SYMBOLS FIG.7, the symbol is the third data, the input of 405 is the third signal); determining a frequency offset by processing samples of the third signal (405 FIG.4/FIG.5, column 3 lines 50-55); generating a correction sequence from the determined frequency offset (430 FIG.5); and combining the second signal with the correction sequence obtained from the third signal to correct the determined frequency offset (403 FIG.5 is the combiner, column 4 lines 15-20).

However Liu et al. teaches the downconverting to have the second data (the chip rate signal) to the SS demodulator where the received signal is correlated/despreaded (16-6-24 FIG.1, column 4 lines 40-52 wherein the sampler 16 decimates/downconvertes the over sampled signal to chip rate signal 40 to the SS demodulator, FIG.2). As Belotserkovsky et al. oversampling the signal (column 5 lines 54-60), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the teaching of decimating/downconverting the signal to chip rate signal taught by Liu et al. in Belotserkovsky et al.'s 402 of FIG.1/FIG.5 to have a more efficient system and method to correct the offset (column 1 lines 59-64).

The combined/modified method/system/receiver has the second signal (the chip rate signal inputted to the correlator 404 FIG.1 '857) determined based at least on the first signal, wherein the second rate (the chip rate) is lower than the first data rate at multiple of chip rate; the third signal (the output of the correlator 404) determined based at least on the second signal (output of the 402 FIG.1) having the third data rate being lower than the second data rate. The combined/modified method/system/receiver obtains the invention as specified in claims.

Regarding **claim 2**, Belotserkovsky et al. discloses the filter and the step of filtering the determined frequency offset prior to the generation of a correction sequence (432 FIG.5).

Regarding **claim 7**, Belotserkovsky et al. discloses the filter and the step of filtering the determined frequency offset prior to the generation of a correction sequence (432 FIG.5).

Regarding **claim 11**, Belotserkovsky et al. discloses the system is a code division multiple access system (column 1 lines 40-50).

Regarding **claims 15 & 17**, Belotserkovsky et al. discloses a timing circuitry communicatively coupled between the analog to digital converter and the downconverter to perform a timing correction function (420 FIG.4, 403 FIG.5, wherein the timing circuitry 402 is communicatively coupled between the ADC 401 and downconverter 403).

4. Claims 3-4, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al. (US 6621857 B1) in view of Liu et al. (US 5982809) as applied to claim 1 or 6 above, and further in view of Kojima (U.S. Patent 5579338).

Regarding **claim 3**, Belotserkovsky et al. does not explicitly specify the mathematical argument needed in determining a frequency offset, however further Kojima teaches performing the mathematical operation (60-62 Fig.5, column 9 line 50-column 10 line 15) in the step of determining a frequency offset. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the operation taught by Kojima in Belotserkovsky et al.'s phase/frequency estimator to perform the mathematical operations required to generate the frequency offset to have a simple configuration of a digital circuit of a code-correlator of a SS communications system receiver (column 3 lines 54-60 '338).

Regarding **claim 4**, except specify the correction factor, Belotserkovsky et al.

discloses the communication system is a code division multiple access communication system (column 1 lines 40-50). However further Kojima teaches the frequency offset is corrected by multiplying received data by a correction factor (62, 66, 69, 40-44, Fig.5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the correction factor taught by Kojima in Belotserkovsky et al.'s method to generate the frequency offset to have a simple configuration of a digital circuit of a code-correlator of a SS communications system receiver (column 3 lines 54-60 '338).

Regarding **claim 8**, Belotserkovsky et al. does not explicitly specify the mathematical argument needed in determining a frequency offset, however further Kojima teaches performing the mathematical operation (60-62 Fig.5, column 9 line 50-column 10 line 15) in the step of determining a frequency offset. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the operation taught by Kojima in Belotserkovsky et al.'s phase/frequency estimator to perform the mathematical operations required to generate the frequency offset to have a simple configuration of a digital circuit of a code-correlator of a SS communications system receiver (column 3 lines 54-60 '338).

Regarding **claim 9**, except specify the correction factor, Belotserkovsky et al. discloses the communication system is a code division multiple access communication system (column 1 lines 40-50). However further Kojima teaches the frequency offset is corrected by multiplying received data by a correction factor (62, 66, 69, 40-44, Fig.5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the correction factor taught by Kojima in Belotserkovsky et al.'s method to generate the frequency

offset to have a simple configuration of a digital circuit of a code-correlator of a SS communications system receiver (column 3 lines 54-60 '338).

5. Claims 5, 10, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al. (US 6621857 B1) in view of Liu et al. (US 5982809) as applied to claim 1 above, and further in view of Subramanian (US Patent 5361276).

Regarding **claim 5**, Belotserkovsky et al. does not specify the mathematical form of the correction sequence, Subramanian teaches the correction sequence is equal to exp $\{j\phi_{offs}(k)\}$ (column 12 line 60-column 13 line 60, the equation at line 60 wherein the $2\pi\Delta f(k)$ is the $\phi_{offs}(k)$) where $\phi_{offs}(k)$ represents phase offset value are interpolated from an average phase difference at the third data rate (column 10 lines 34-39, column 10 line 46-column 11 line 6, column 12 lines 45-55. FIG.4B, column 13 lines 35-45 wherein the correction sequence is at third rate, the interpolation is done at the third rate as in 402 FIG.4 '857). With the model provided by Belotserkovsky et al., at the time of the invention, it would have been obvious to a person of ordinary skill in the art to derive the correction sequence taught by Subramanian in Belotserkovsky et al.'s method to generate frequency correction to efficiently identify main and multipath return signals (Abstract).

Regarding **claims 10 & 19-20**, Belotserkovsky et al. does not specify the mathematical form of the correction sequence, however further Subramanian teaches the correction sequence is equal to exp $\{j\phi_{offs}(k)\}$ (column 12 line 60-column 13 line 60, the equation at line 60 wherein the $2\pi\Delta f(k)$ is the $\phi_{offs}(k)$) where $\phi_{offs}(k)$ represents phase offset value are interpolated from an average phase difference at the third data rate (column 10 lines 34-39, column 10 line 46-column

11 line 6, column 12 lines 45-55. FIG.4B, column 13 lines 35-45 wherein the correction sequence is at third rate, the interpolation is done at the third rate as in 402 FIG.4 '857). With the model provided by Belotserkovsky et al., at the time of the invention, it would have been obvious to a person of ordinary skill in the art to derive the correction sequence taught by Subramanian in Belotserkovsky et al.'s method to generate frequency correction to efficiently identify main and multipath return signals (Abstract).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al. (US 6621857 B1) in view of Liu et al. (US 5982809) as applied to claim 6 above, and further in view of Bunker et al. (US 6314128 B1).

Regarding **claim 12**, Belotserkovsky et al. does not teach the local loop, however further Bunker et al. teaches the spread spectrum communication system is a wireless local loop link. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to deploy the Belotserkovsky et al.'s communication system in the wireless local loop link, not limited to military applications to reduce the interference (column 1 lines 13-25 '128).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
July 10, 2004

CHIEH M. FAN
PRIMARY EXAMINER